

REMARKS

In the Office Action of March 22, 2006 Claims 1-24 were pending for consideration with Claims 25-42 being withdrawn from consideration. Each of Claims 1-24 was rejected under 35 U.S.C. 103(a) as allegedly obvious over U.S. Pat. No. 3,179,979 (hereinafter "Bundy") in view of U.S. Pat. No. 5,772,756 (hereinafter "Davies").

The Invention

By the present amendment, Claim 1 has been amended to positively claim that the reaction assembly is placed and oriented in the high pressure volume such that the bulk raw material diffusion direction "is oriented substantially perpendicular to gravity during application of high pressure." The bulk raw diffusion direction is defined by the arrangement of materials within the high pressure reaction assembly and is related to formation of a reaction assembly using a thermal gradient synthesis technique. See page 10, line 30 through page 11, line 3. Therefore, the specific materials and arrangement thereof are explicitly claimed in Claim 1 and are not merely "capable of" or "adapted to" be used as such. Applicant is claiming as a part of the structure, the high pressure reaction assembly having the above orientation, not just an empty high pressure apparatus. With this limitation in mind, the remaining rejection is addressed below.

Rejection under 35 U.S.C. § 103

The Examiner has rejected claims 1-24 under 35 U.S.C. 103(a) as allegedly obvious over Bundy in view of Davies. As mentioned in a previous Office Action response, the three criteria for establishing a *prima facie* case of obviousness include that the asserted references as modified or combined must: 1) teach or suggest each and every element of the claimed invention; 2) provide motivation for the modification or combination asserted; and 3) provide a likelihood of successfully making the modification or combination. Applicant respectfully submits that the cited references fail to teach or suggest each and every element and provide no motivation to make the proposed modification necessary to arrive at the claimed invention.

Bundy

Bundy teaches the use of a high pressure die assembly in a high pressure apparatus which utilizes hydraulic pressure to advance a plurality of ram segments. The cavity (12) is not horizontally oriented as suggested by the Examiner. Column 2, lines 6-10 clarify that Fig. 1 is a

“top sectional view” of one embodiment of the invention. In other words, Fig. 1 is a view looking down at the top of the disclosed apparatus. As a result, when considered in three dimensions, the cavity (12) would not be oriented horizontally, but rather, vertically in accordance with conventional high pressure diamond synthesis.

Further, nothing in the Bundy reference teaches or suggests the explicitly claimed reaction assembly which includes a catalyst layer, a raw material layer and at least one crystalline seed contacting the catalyst layer. Applicant respectfully disagrees with the assertion that “[t]hese limitations do not positively define the structure of the apparatus.” The reaction assembly is explicitly claimed as a required structure having tangible parts and a specified relationship with the apparatus. It is noted that the claimed invention is a “system” which includes both a “high pressure apparatus” and a “high pressure reaction assembly.” The rejection appears to ignore the second portion of the claimed system. The above amendments are intended to make this aspect clear. Further, the Applicant concedes that the recited case law requires that a device be limited to what it “is” and not what a device “does.” However, Claim 1 has not included any language which can be construed as a method, intended use, action or other intangible function which does not relate to a difference in structure. Rather, the entire system is claimed as an apparatus and assembly which when combined have tangible and specific structure and relationship to one another as described above which is unique. As a result, the cited case law is in applicable and does not support the proposed rejection.

Davies

Davies teaches a method of producing diamond crystal growth on a seed crystal along certain crystallographic planes in order to produce diamonds with a specific aspect ratio. The method includes crystal seeds, a metallic catalyst/solvent, and a high pressure, high temperature chamber. Specifically Davies emphasizes the orientation of diamond seed crystals with respect to a seed pad (16) upon which the seed crystals rest in order to achieve growth on the desired re-entrant surfaces of the seed crystals. Nothing in Davies teaches or suggests configuring a raw material layer so that it diffuses into a catalyst layer in a diffusion direction that is substantially perpendicular to gravity. In fact, Davies teaches that the catalyst layers (18) and (22) are layered above and below the graphite layer (20), and that this entire assembly is placed on top of the seed pad (16) which contains a plurality of diamond seeds (24). The three dimensional

orientation of the assembly is clear from the Figs. 1 and 2 in connection with col. 2, lines 15-20 of the specification which states that the sectional views provided are side and front views respectively. Accordingly, the movement of graphite (20) into the catalyst layers (18) and (20) would have to be vertical (i.e. parallel to the direction of gravity). Again, this diffusion orientation parallel to gravity is conventional in the art of diamond synthesis. Therefore, Davies fails to teach or suggest the claimed reaction assembly and apparatus combination.

Bundy in view of Davies

The Examiner has rejected claims 1-24 as allegedly obvious over Bundy in view of Davies. Even assuming, *arguendo* that this combination was proper, these references fail to teach or suggest each and every element of the present invention as set forth in Claim 1. Most particularly, Claim 1 requires that the materials subjected to high pressure by the system be oriented and configured in a manner such that the diffusion direction of the raw material layer is oriented substantially perpendicular to gravity. By contrast, as noted above, Bundy is silent on the arrangement of materials in the cavity (12), and cavity (12) is in fact, oriented vertically, rather than horizontally as asserted by the Examiner.

Further, Davies teaches diamond synthesis with a reaction chamber and arrangement of elements in the chamber where graphite raw material diffuses into a catalyst layer in a direction that is parallel to gravity. See col. 3, lines 35-39, Figs. 1 and 2. Therefore, Davies clearly does not teach the material orientation required by the system of the present invention and fails to remedy the deficiencies of the Bundy reference.

In view of the fact that Bundy and Davies fails to teach or suggest each and every element of Claim 1, Applicant submits that the rejection does not establish a *prima facie* case of obviousness and cannot be sustained. Claims 2-24 each depend from Claim 1 and are similarly situated as non-obvious in view of the cited references. Therefore, Applicant respectfully requests that the rejection be withdrawn and the claims passed to issuance.

CONCLUSION

In view of the foregoing, Applicants believe that claims 1-24 present allowable subject matter and allowance is respectfully requested. If any impediment to the allowance of these claims remains after consideration of the above remarks, and such impediment could be removed during a telephone interview, the Examiner is invited to telephone Mr. Erik S. Erickson, or in his absence, the undersigned, at (801) 566-6633, so that such issues may be resolved as expeditiously as possible.

Please charge any additional fees except for Issue Fee or credit any overpayment to Deposit Account No. 20-0100.

Dated this 22nd day of August, 2006.

Respectfully submitted,



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